SPEC® OMPG2012 Result

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Lenovo Global Technology

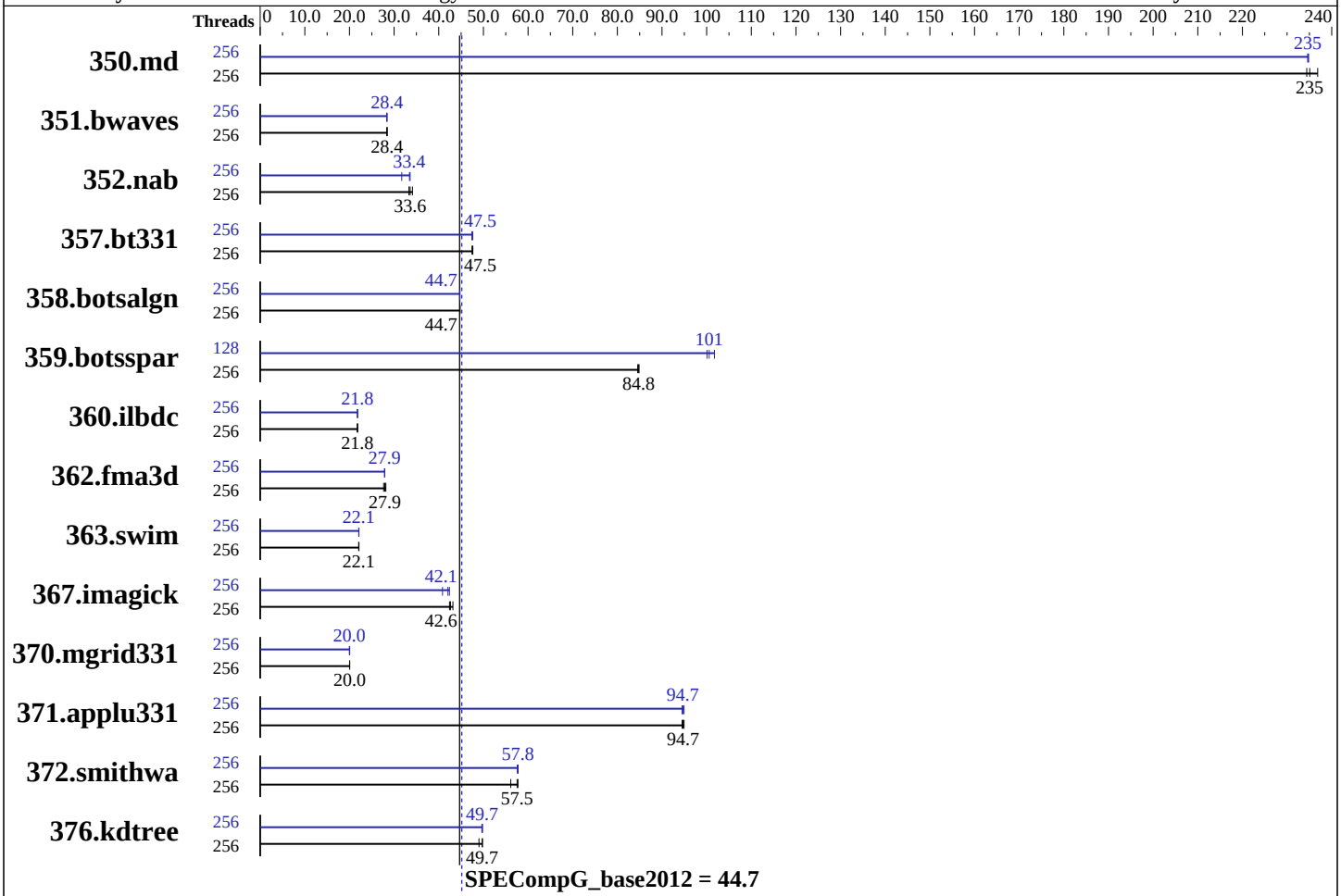
ThinkSystem SR665(AMD EYPC 7763 CPU, 2.45GHz)

SPECompG_peak2012 = 45.2

SPECompG_base2012 = 44.7

OMP2012 license:28
Test sponsor: Lenovo Global Technology
Tested by: Lenovo Global Technology

Test date: Feb-2021
Hardware Availability: Mar-2021
Software Availability: Mar-2021



Hardware

CPU Name:	AMD EPYC 7763 CPU
CPU Characteristics:	Turbo up to 3.5 GHz
CPU MHz:	2450
CPU MHz Maximum:	3500
FPU:	Integrated
CPU(s) enabled:	128 cores, 2 chips, 64 cores/chip, 2 threads/core
CPU(s) orderable:	1,2 Chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	512 KB I+D on chip per core
L3 Cache:	256 MB I+D on chip per chip,32 MB shared / 8 cores
Other Cache:	None
Memory:	1 TB (32 x 32 GB 2Rx8 PC4-3200AA-R)
Disk Subsystem:	1 x 1 TB SATA Hard Drive
Other Hardware:	None
Base Threads Run:	256
Minimum Peak Threads:	128

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Software

Operating System:	Red Hat Enterprise Linux 8.3 (x86_64) , Kernel 4.18.0-240.el8.x86_64
Compiler:	C/C++/Fortran: Version 19.4 of PGI Community Edition
Auto Parallel:	No
File System:	xfs
System State:	Multi-user, run level 3
Base Pointers:	64-bit
Peak Pointers:	Not Applicable
Other Software:	None

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Maximum Peak Threads: 256

Results Table

Benchmark	Base							Peak						
	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Threads	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
350.md	256	19.5	237	**19.7**	**235**	19.8	234	256	19.7	235	19.7	235	**19.7**	**235**
351.bwaves	256	160	28.4	159	28.4	**159**	**28.4**	256	**159**	**28.4**	160	28.3	159	28.4
352.nab	256	117	33.3	**116**	**33.6**	114	34.1	256	116	33.6	**116**	**33.4**	123	31.7
357.bt331	256	**99.7**	**47.5**	99.5	47.6	99.9	47.5	256	**99.8**	**47.5**	100	47.4	99.6	47.6
358.botsalgn	256	97.3	44.7	**97.2**	**44.7**	97.2	44.8	256	**97.3**	**44.7**	97.3	44.7	97.2	44.7
359.botsspar	256	61.9	84.8	**61.9**	**84.8**	62.1	84.6	128	**52.2**	**101**	52.5	100	51.6	102
360.ilbdc	256	163	21.8	164	21.8	**163**	**21.8**	256	163	21.8	**163**	**21.8**	163	21.8
362.fma3d	256	**136**	**27.9**	137	27.7	135	28.2	256	136	27.9	**136**	**27.9**	137	27.8
363.swim	256	205	22.1	205	22.1	**205**	**22.1**	256	205	22.1	205	22.1	**205**	**22.1**
367.imagick	256	166	42.4	163	43.2	**165**	**42.6**	256	166	42.4	**167**	**42.1**	172	40.8
370.mgrid331	256	220	20.0	221	20.0	**221**	**20.0**	256	221	20.0	220	20.1	**221**	**20.0**
371.applu331	256	64.1	94.5	63.8	94.9	**64.0**	**94.7**	256	64.1	94.5	63.8	94.9	**64.0**	**94.7**
372.smithwa	256	92.8	57.7	95.5	56.1	**93.2**	**57.5**	256	**92.8**	**57.8**	92.8	57.8	93.1	57.6
376.kdtree	256	**90.5**	**49.7**	90.4	49.8	91.8	49.0	256	90.4	49.8	90.6	49.7	**90.5**	**49.7**

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Platform Notes

```
Sysinfo program /home/omp2012/Docs/sysinfo
Revision 563 of 2016-06-10 (097295389cf6073d8c3b03fa376740a5)
running on SR665_SPEComp Mon Feb 22 04:52:32 2021

This section contains SUT (System Under Test) info as seen by
some common utilities.  To remove or add to this section, see:
  http://www.spec.org/omp2012/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : AMD EPYC 7763 64-Core Processor
      2 "physical id"s (chips)
      256 "processors"
   cores, siblings (Caution: counting these is hw and system dependent.  The
   following excerpts from /proc/cpuinfo might not be reliable.  Use with
   caution.)
      cpu cores : 64
      siblings  : 128
      physical 0: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
      22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46
      47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
      physical 1: cores 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
      22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46
      47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63
```

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Platform Notes (Continued)

```
      cache size : 512 KB

   From /proc/meminfo
      MemTotal:       1056386180 kB
      HugePages_Total:       0
      Hugepagesize:       2048 kB

   From /etc/*release* /etc/*version*
      os-release:
         NAME="Red Hat Enterprise Linux"
         VERSION="8.3 (Ootpa)"
         ID="rhel"
         ID_LIKE="fedora"
         VERSION_ID="8.3"
         PLATFORM_ID="platform:el8"
         PRETTY_NAME="Red Hat Enterprise Linux 8.3 (Ootpa)"
         ANSI_COLOR="0;31"
      redhat-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
      system-release: Red Hat Enterprise Linux release 8.3 (Ootpa)
      system-release-cpe: cpe:/o:redhat:enterprise_linux:8.3:ga

   uname -a:
      Linux SR665_SPEComp 4.18.0-240.el8.x86_64 #1 SMP Wed Sep 23 05:13:10 EDT 2020
      x86_64 x86_64 x86_64 GNU/Linux

   run-level 3 Feb 22 04:51

   SPEC is set to: /home/omp2012
      Filesystem            Type  Size  Used Avail Use% Mounted on
      /dev/mapper/rhel-home xfs   819G  135G  684G  17% /home
   Additional information from dmidecode:

      Warning: Use caution when you interpret this section. The 'dmidecode' program
      reads system data which is "intended to allow hardware to be accurately
      determined", but the intent may not be met, as there are frequent changes to
      hardware, firmware, and the "DMTF SMBIOS" standard.

     BIOS Lenovo D8E113Y-2.00 01/20/2021
     Memory:
      32x Samsung M393A4G43AB3-CWE 32 GB 2 rank 3200 MT/s

   (End of data from sysinfo program)
```

General Notes

```
 ================================================
  General OMP Library Settings
  ENV_KMP_AFFINITY=granularity=fine,proclist=[0-15,16-31,32-47,48-63,64-79,
   80-95,96-111,112-127,128-143,144-159,160-175,176-191,192-207,208-223,
     224-239,240-255],explicit
```

Continued on next page

General Notes (Continued)

```
 ENV_OMP_THREADS  = 256
 ENV_KMP_STACKSIZE = 256M
 ENV_KMP_BLOCKTIME = infinite
 ENV_KMP_LIBRARY  = turnaround
 ENV_OMP_DYNAMIC  = FALSE
 ENV_OMP_NESTED  = FALSE
 ENV_OMP_SCHEDULE = static

==============================================
  BIOS Setting notes:
  -------------------
  Choose Operating Mode set to Maximum Performance and changed to Customer Mode
  CPPC set as Disable
  ACPI SRAT L3 Cache as NUMA Domain set as Enabled
  SOC P-State set as P0
 ==============================================
 Yes: The test sponsor attests, as of date of publication, the CVE-2017-5754 (Meltdown)
 is mitigated in the system as tested and documented.
 Yes: The test sponsor attests, as of date of publication, the CVE-2017-5753 (Spectre variant 1)
 is mitigated in the system as tested and documented.
 Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Spectre variant 2)
 is mitigated in the system as tested and documented.
==============================================
 OS tunning:
 ulimit -s unlimited
==============================================
 Peak config:
 359.botsspar:peak
     threads=128
 371.applu331:peak
     threads=128
==============================================
```

Base Compiler Invocation

C benchmarks:
pgcc

C++ benchmarks:
pgc++

Fortran benchmarks:
pgfortran

Base Portability Flags

350.md: -Mfree

Continued on next page

Base Portability Flags (Continued)

357.bt331: `-mcmodel=medium`
362.fma3d: `-Mfree`
363.swim: `-mcmodel=medium`

Base Optimization Flags

C benchmarks:
`-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Masmkeyword -Mnosingle -Mschar -Mnom128`

C++ benchmarks:
`-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mnoasmkeyword`

Fortran benchmarks:

350.md: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex -Mcray=pointer`

351.bwaves: `Same as 350.md`

357.bt331: `Same as 350.md`

360.ilbdc: `Same as 350.md`

362.fma3d: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex -Mcray=pointer -Mnoupcase -pgf90libs`

363.swim: `Same as 350.md`

370.mgrid331: `Same as 350.md`

371.applu331: `Same as 350.md`

Peak Compiler Invocation

C benchmarks:
`pgcc`

C++ benchmarks:
`pgc++`

Fortran benchmarks:
`pgfortran`

Peak Portability Flags

350.md: `-Mfree`
357.bt331: `-mcmodel=medium`
362.fma3d: `-Mfree`
363.swim: `-mcmodel=medium`

Peak Optimization Flags

C benchmarks:

352.nab: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Masmkeyword -Mnosingle -Mschar -Mnom128 -alias=ansi`

358.botsalgn: Same as 352.nab

359.botsspar: Same as 352.nab

367.imagick: Same as 352.nab

372.smithwa: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Masmkeyword -Mnosingle -Mschar -Mnom128`

C++ benchmarks:
`-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mnoasmkeyword -Mnosingle -alias=ansi`

Fortran benchmarks:

350.md: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex -Mcray=pointer -Mbackslash -Mdlines`

351.bwaves: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -fastsse -Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex -Mcray=pointer -Mfixed -pgf77libs`

357.bt331: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -fastsse -Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex -Mcray=pointer`

360.ilbdc: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex -Mcray=pointer -Mnoupcase`

362.fma3d: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex -Mcray=pointer -Mnoupcase -pgf90libs`

Continued on next page

Peak Optimization Flags (Continued)

363.swim: `-O3 -tp=zen -mp -m64 -fast -Mmovnt -Mfprelaxed -Mallocatable=95 -Mdefaultunit -Mnostride0 -Mnoiomutex -Mcray=pointer`

370.mgrid331: `Same as 363.swim`

371.applu331: `Same as 363.swim`

The flags file that was used to format this result can be browsed at
`http://www.spec.org/omp2012/flags/Lenovo-OMP2012-Rome7H12.20210315.html`

You can also download the XML flags source by saving the following link:
`http://www.spec.org/omp2012/flags/Lenovo-OMP2012-Rome7H12.20210315.xml`

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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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